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Two New Species of *Armadilloniscus* Uljanin, 1875 (Isopoda, Oniscidea, Scyphacidae) from Taiwan

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ABSTRACT

Two new species of the genus *Armadilloniscus* Uljanin, 1875, *A. hoonsooi* and *A. lanyuensis*, are described from Taiwan.

Key words: Crustacea, Isopoda, Oniscidea, Scyphcidae, *Armadilloniscus*, taxonomy, new species, Taiwan.

INTRODUCTION

Since Taiti and Ferrara (1989) included 27 nominal species in the genus *Armadilloniscus*, *A. litoralis* Budde-Lund, 1885 has been proved to be a junior synonym of *A. ellipticus* (Harger, 1878) (Garthwaite, Lawson and Taiti, 1992) and Kwon (1995) considered *A. hoshikawai* Nunomura, 1984 and *A. amakusaensis* Nunomura, 1984 to be junior synonyms of *A. ellipticus*. Still several species are probably junior synonyms of previously described species (*A. ellipticus* in particular, refer to Taiti and Ferrara, 1989).

Despite of their halophilic habitats, most of the species have narrow distribution probably due to the poor investigation. Only one species, *A. ellipticus*, has a very wide distribution from the Atlantic coasts of North America, the Azores and Madeira, the Mediterranean, Madagascar, Malay Peninsular, Hong Kong, Japan, Korea and the Hawaiian Islands. *A. quadricornis* and *A. lamellatus* are known to distribute both the Indian and West Pacific coasts.

This paper deals with the descriptions of two new species of *Armadilloniscus* collected recently from Taiwan. Type specimens are deposited in the Muséum d'Histoire Naturelle, Genève (MHNG), the Museo Zoologico 'La Specola' dell'Università, Florence (MZUF), the Taiwan Museum, Taipei (TM), and the Department of Biology, Inje University, Kimhae (IJB).

DESCRIPTIONS

***Armadilloniscus hoonsooi*, n. sp. (Figs. 1 and 2)**

Material examined. Holotype. ♀, Pingtung Hsian, Shiaoliuchiu Island, 23.iv.1992, leg. D.H. Kwon & D.S. Jeon (MHNG). Paratypes. 1 ♂, same data as holotype (NHMG); 1 ♀, same data (MZUF); 1 ♀, same data (TM); 1 ♂ (dissected), 1 ♀, same data (IJB).

Description. Dimension of male 2.3 × 1.0 mm, of female 2.8 × 1.2 mm. Color in alcohol violet-grey with yellowish muscle spots, darker in the lateral part of the body. Dorsum highly convex with recurved lateral parts (epimera). Tergal ornamentation differing between males and females. Ornamentation of fully grown female: cephalon with 2 long lamelliform horns in front and two longuitudinal ones on vertex sides; 4 anterior bosses beneath frontal and lateral horns; 2 median

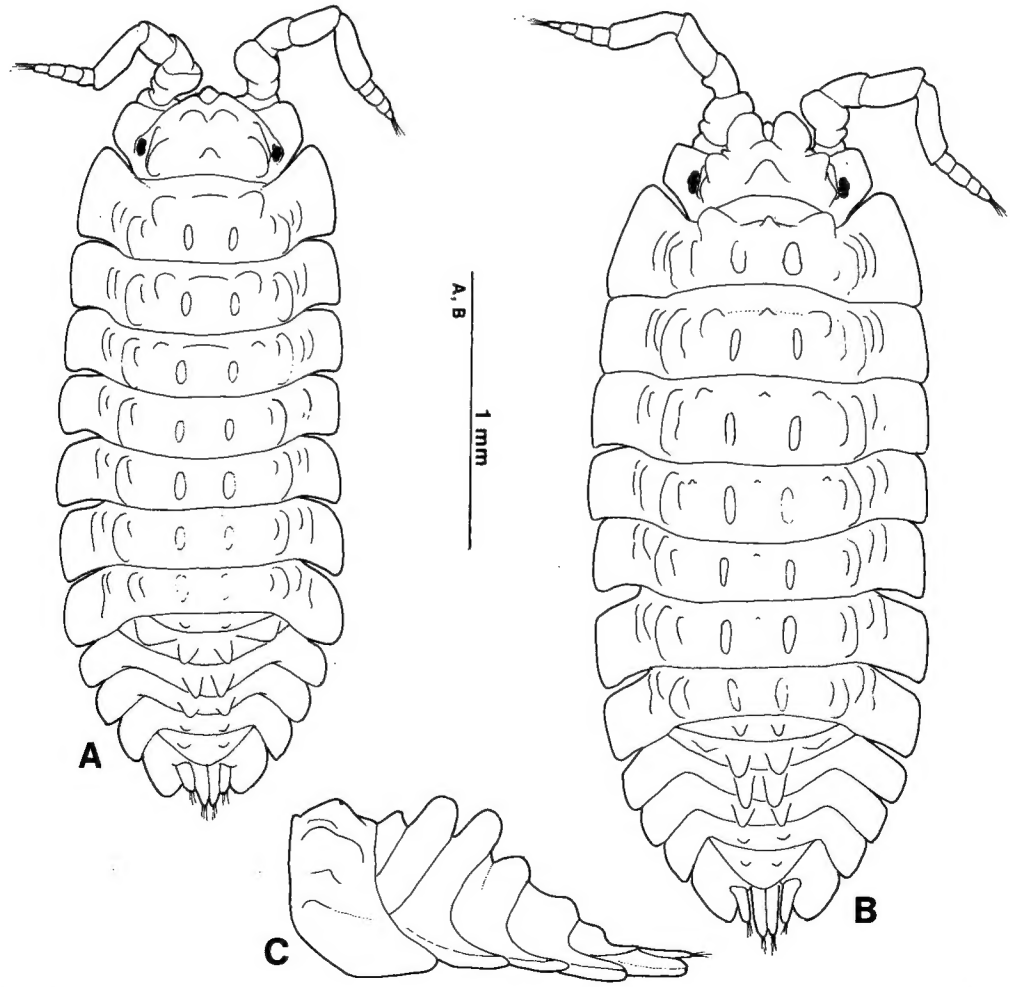

Fig. 1. *Armadilloniscus hoonsooi*, n. sp.: A, habitus, male; B, habitus, female; C, pereonite 7, pleon and telson, female, lateral view.

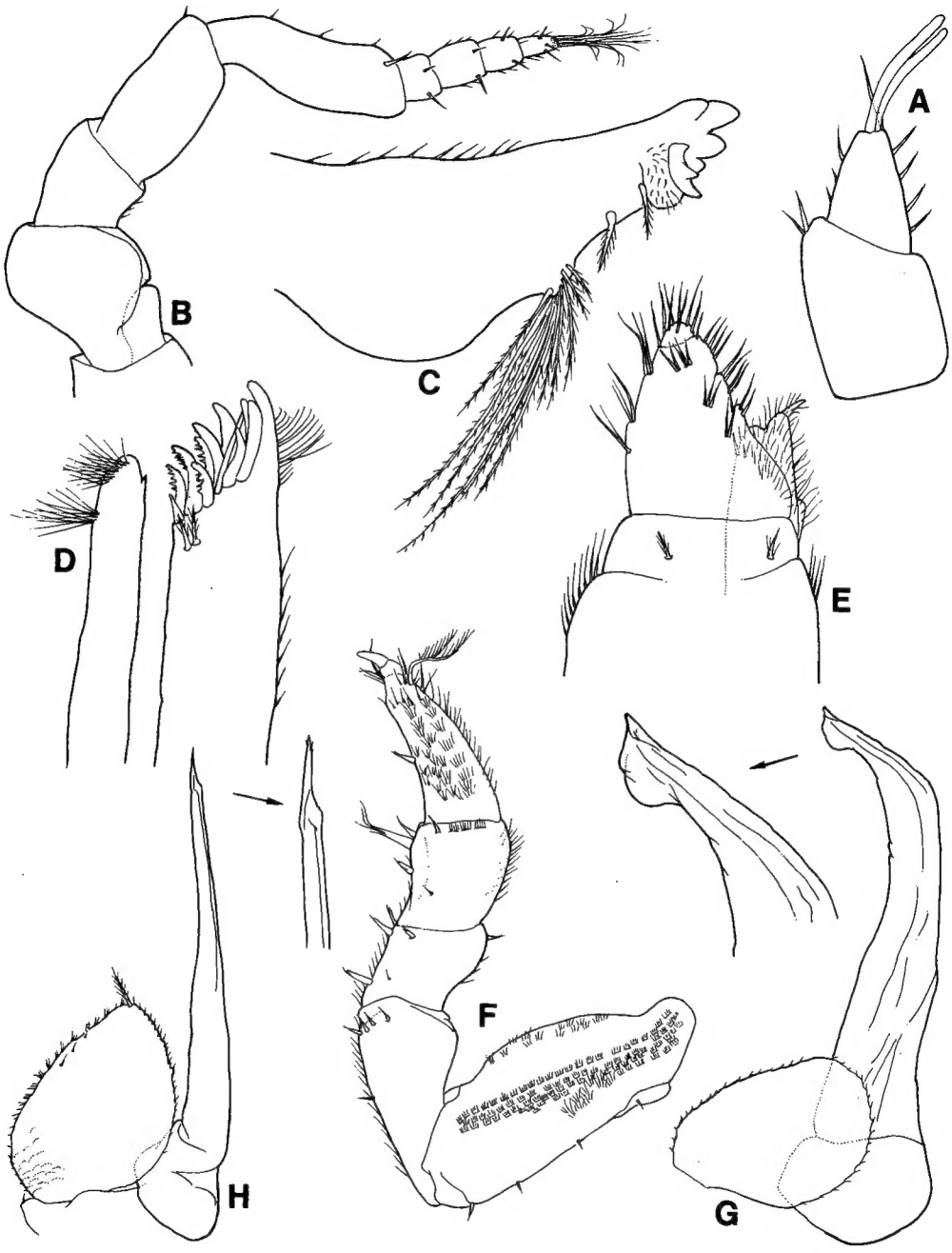

Fig. 2. *Armadilloniscus hoonsooi*, n. sp.: A, antennule; B, antenna; C, left mandible; D, maxillule; E, maxilliped; F, pereopod 7, male; G, pleopod 1, male; H, pleopod 2, male.

bosses behind frontal horns, posterior one bigger; each pereonite with 2 strongly developed paramedian ribs, and 1 strongly developed and 3 low ribs per side; pereonites 1-6 with small median protuberance, progressively diminishing on posterior pereonites; pereonites 1-4 with 2 additional protuberances near anterior margin, progressively diminishing posteriorly; each pleonite and telson

with 2 protuberances, much more prominent on pleonites 2 and 3 (Fig. 1C). Ornamentation of young female and male similar to that of female except for cephalon with low bosses instead of lamelliform horns in female, pereonites lacking median protuberances, and pereonite 4 lacking anterior protuberances. Male with pleonite 2 bearing a pair of lateral swellings more prominent than in female.

Body outline as in Figs. 1A, B. Eye with 4 ommatidia, usually not distinct. Cephalon with median lobe triangular, apex almost right-angled; anterolateral lobes subquadrate. Frontal and supraantennal line not visible. Epimera of pereonites 1-6 with posterior margins slightly concave, of pereonite 7 almost straight. Telson triangular with oblique sides straight and apex broadly rounded.

Antennule (Fig. 2A) with 2 articles; distal article setose along sides, bearing 2 aesthetascs and a seta at apex. Antenna (Fig. 2B) with peduncular segment 5 curved, narrower than segment 4; flagellum 4-articulated with distal article bearing 2 sutures. Mandible (Fig. 2C) with incisor 4-toothed; molar penicil of many plumose setae. Maxillule (Fig. 2D) with endopodite bearing 2 penicils in the form of tufts of setae, a subapical point on outer margin; exopodite with a small straight tooth at inner-distal corner, 10 curved teeth (4 serrate + 6 simple) and a long seta apically, 2 penicils on rostral surface. Maxilliped (Fig. 2E) with 3-segmented palp, second segment 3-lobed on inner margin; endite with 2-lobed distal margin, bearing a setose penicil on inner lobe. Uropodal protopod with postero-medial corner rounded; exopod reaching tip of protopod; endopod about twice as long as exopod, clearly protruding backwards compared with protopod.

Male. Pereopods without apparent modifications. Pleopod 1 (Fig. 2G) exopod ovoidal with short marginal setae; endopod tapering with distal part abruptly bent outwards, a hemicircular lobe subapically on outer margin. Pleopod 2 (Fig. 2H) exopod foliaceous, serrate on inner margin, bearing a plumose seta at apex; endopod styliform with narrowed apical part bearing 2 setules subapically.

Etymology. The new species is named after Dr. Hoon Soo Kim, Emeritus Professor of Seoul National University.

Remarks. The new species belongs to the *quadricornis*-group which includes *A. quadricornis* Vandel, 1970, *A. mirabilis* Ferrara, 1974, *A. indicus* Ferrara and Taiti, 1983, *A. lamellatus* Taiti and Ferrara, 1989, and *A. malaccensis* Taiti and Ferrara, 1989. This group is characterized by sexual dimorphism in tergal ornamentation, pleopod 1 endopod of male bent outwards and bearing a subapical hyaline lobe, pleopod 2 endopod of male sharply pointed and pleonite 2 of male with a pair of lateral bosses (Taiti and Ferrara, 1989).

A. hoonsooi is easily distinguished from *A. mirabilis, A. indicus, A. lamellatus* and *A. malaccensis* by the ornamentation of the pereon where two strongly developed paramedian ribs are present on each pereonite. *A. quadricornis* was briefly described from Rennell Island, Solomon Islands by Vandel (1970). Taiti and Ferrara (1989) examined this species from Malaysia and Indonesia (Sumbawa) and presented good illustrations of habitus and male characters without description. The ornamentation on cephalon and pereon of *A. hoonsooi* is almost indistinguishable from *A. quadricornis* but we could find slight differences in the ornamentation on pleon between the two species: the former has less developed lateral swellings on pleonite 2 in male, and lacks three minute tubercles on pleonite 2 [Vandel (1970) erroneously described they were on pleonite 2] in female. *A. quadricornis* probably has two paramedian protuberances on each pleonite and telson of almost same size, when we judged from figures of Taiti and Ferrara (1989), but in *A. hoonsooi* ones

on pleonites 2 and 3 are much more developed than those on pleonite 1, 4-5, and telson (see Fig. 1C). Furthermore, *A. hoonsooi* has anterolateral lobe of cephalon which is subquadrangular, while *A. quadricornis* has one with rounded apex (refer to Vandel, 1970). Also they differ from each other in the morphology of the exopods of pleopods 1 and 2 in male.

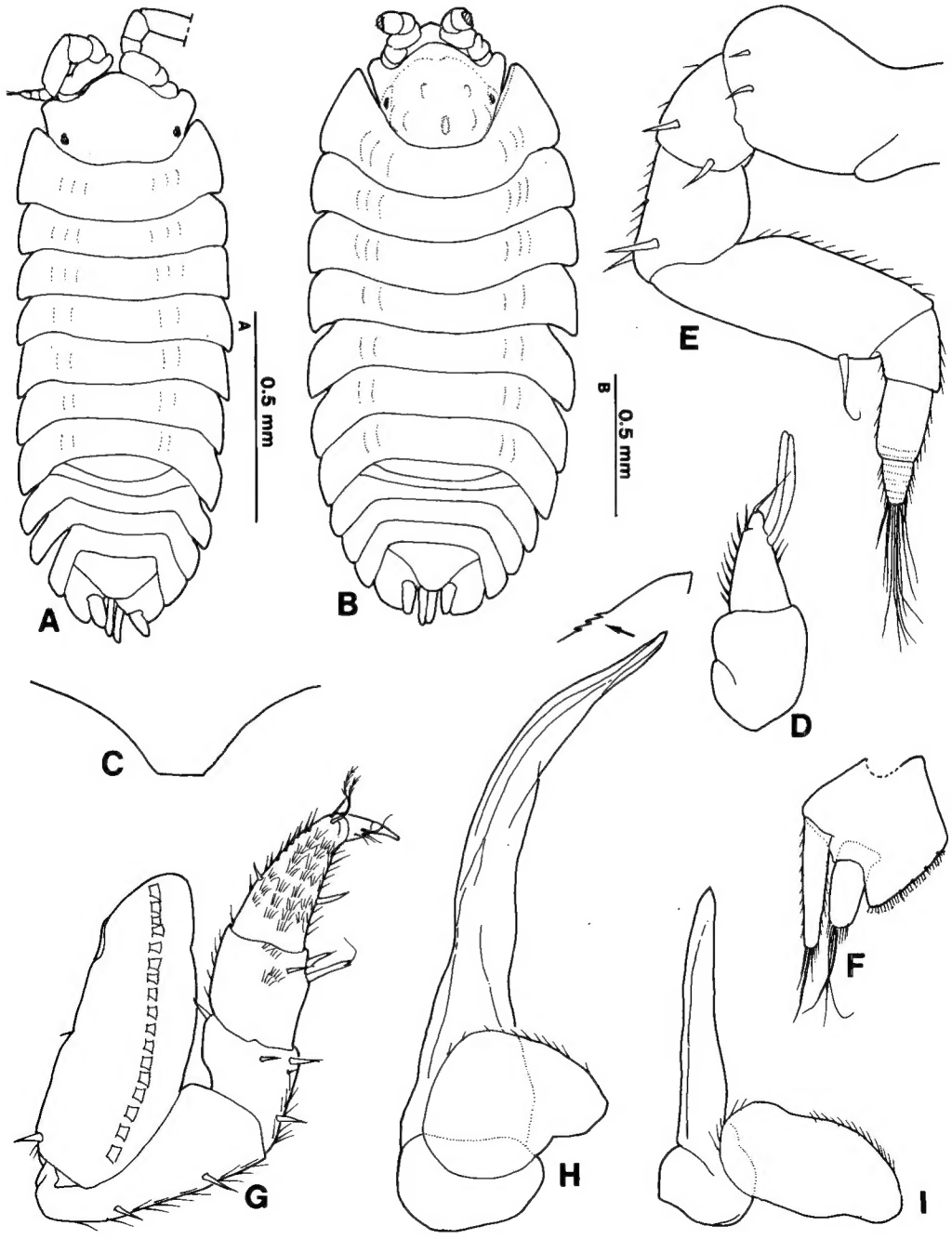

Fig. 3. *Armadilloniscus lanyuensis*, n. sp.: A, habitus, male; B, habitus, female; C, telson; D, antennule; E, antenna; F, uropod; G, pereopod 7, male; H, pleopod 1, male; I, pleopod 2, male.

***Armadilloniscus lanyuensis*, n. sp. (Fig. 3)**

Material examined. Holotype. ♀, Taitung Hsian, Lanyu Island, 26.iii.1994, leg. D.H. Kwon & C.-H. Wang (MHNG). Paratypes. 3 ♀♀, same data as holotype (MHNG); 2 ♀♀, same data (MZUF); 4 ♀♀, same data (TM); 2 ♂♂, 5 ♀♀, same data (IJB).

Description. Dimension of male 1.2 × 0.5 mm, of female 2.0 × 1.0 mm. Color in alcohol creamy white. Body slightly convex, pereonal and pleonal epimera not recurved. Tergal ornamentation not prominent, similar in both sexes: cephalon with 2 anterior and 5 posterior low bosses; pereonites 1-3 with 3 low longitudinal ribs, pereonites 4-7 with 2, pleonites and telson without protuberance.

Body outline as in Figs. 3A, B. Eye with 3 ommatidia, usually not distinct. Cephalon with median lobe triangular with obtusely angled apex; anterolateral lobes narrow, tapering, with rounded apex, and obliquely directed downwards. Frontal and supraantennal line not visible. Epimera of pereonite 1 with posterior margin slightly concave, of 2-7 almost straight. Telson (Fig. 3C) tetrapezoidal with oblique sides slightly concave.

Antennule (Fig. 3D) with 2 articles; distal article setose along sides, bearing 2 aesthetascs subapically and an apical seta. Antenna (Fig. 3E) with peduncular segment 5 straight, as thick as segment 4; flagellum 3-articulated with article 2 much longer than article 1, bearing 2 sutures; article 3 bearing 6 sutures. Mandible, maxillule and maxilliped as in *A. hoonsooi*. Uropodal protopod (Fig. 3F) quadrangular with postero-medial corner subacute; exopod much surpassing tip of protopod; endopod clearly protruding backwards compared with exopod.

Male. Body more slender than in female. Pereopods without apparent modifications. Pleopod 1 (Fig. 3H) exopod small, triangular with rounded apex; endopod tapering with distal part bent outwards, serrate on inner-distal margin, apex acutely pointed. Pleopod 2 (Fig. 3I) exopod transversely elongate-elliptical; endopod short and straight with apical apex.

Etymology. The specific name, *lanyuensis*, refers to the Lanyu Island where the specimens were collected.

Remarks. We assign the present species in *Armadilloniscus*, without hesitation, in spite of the antennal flagellum of 3 articles instead of 4 because it possesses all the other typical characters of the genus. Another species, *A. iliffei* Taiti and Ferrara, 1989 from New Caledonia, also has 3-articulated flagellum, but it has unique characters such as the molar penicil of mandible with fewer (6-8) plumose setae, and the exopodite of maxillule with 4 serrate teeth and without tuft of setae on outer margin near apex, all of these are considered as primitive (Taiti and Ferrara, 1989). *Armadilloniscus lanyuensis* is close to A. *hawaiianus* Taiti and Ferrara, 1989 in the antenna with peduncular segment 5 not curved and stout, but is easily distinguished by the tergal ornamentation. From the members of the *ellipticus*-group it differs in the small size, broadly rounded median lobe of cephalon, and 3-articulated antennal flagellum.

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REFERENCES

Garthwaite, R.L., R. Lawson and S. Taiti, 1992. Morphological and genetic relationships among four species of *Armadilloniscus* Uljanin, 1875 (Isopoda: Oniscidea: Scyphacidae). J. nat. Hist., **26:** 327-338.

Kwon, D.H., 1995. Terrestrial Isopoda (Crustacea) from Cheju Island, Korea. Korean J. Syst. Zool., **11:** 509-538.

Nunomura, N., 1986. Studies on the terrestrial isopods crustaceans in Japan. III. Taxonomy of the families Scyphacidae (continued), Marinoniscidae, Halophiloscidae, Philoscidae and Oniscidae. Bull. Toyama Sci. Mus., **9:** 1-72.

Taiti, S. and F. Ferrara, 1989. New species and records of *Armadilloniscus* Uljanin 1875 (Crustacea Isopoda Oniscidea) from the coasts of the Indian and Pacific oceans. Trop. Zool., **2:** 59-88.

Vandel, A., 1970. 70. Les Isopodes terrestres des îes Rennell et Bellona. The natural history of Rennell Island, British Solomon Islands, **6:** 139-153.

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臺灣産 세갈래쥐며느리屬(甲殼上綱, 等脚目, 쥐며느리亞目)의 2新種

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적 요

臺灣에서 採集된 세갈래쥐며느리屬의 2新種, *A. hoonsooi*와 *A. lanyuensis*를 記載하였다.